

IN THE CLAIMS:

Substitute the following claims for the pending claims having the same numbers.

1-29. (Canceled)

30. (Previously Presented) A well tool, comprising:

an actuator including a piston which displaces in response to a first pressure applied to the piston;

an operating member which displaces to operate the well tool, the operating member having a second pressure applied thereto; and

a magnetic coupling including at least one first magnet attached to the piston and at least one second magnet attached to the operating member,

displacement of the piston being translated into displacement of the operating member while the first and second pressures are isolated from each other, without the use of any dynamic seal isolating the first pressure from the second pressure.

31. (Previously Presented) The well tool according to Claim 30, wherein each of the first and second magnets is a permanent magnet.

32-37. (Canceled)

38. (Previously Presented) A method of actuating a well tool in a well, the method comprising the steps of:

displacing an actuator member of the well tool, the actuator member being exposed to a first pressure, and the well tool having a flow passage for flow of fluid therethrough;

translating displacement of the actuator member to displacement of an operating member by use of a magnetic coupling therebetween, the operating member being exposed to a second pressure, the first and second pressures being isolated from each other; and

actuating the well tool in response to displacement of the operating member.

39. (Original) The method according to Claim 38, wherein in the translating step the magnetic coupling translates displacement from the actuator member to the operating member across a rigid pressure isolation barrier between the first and second pressures.

40. (Original) The method according to Claim 38, wherein in the translating step the first and second pressures are isolated from each other without the use of any dynamic seal therebetween.

41. (Original) The method according to Claim 38, wherein in the displacing step the actuator member is exposed to a third pressure, the actuator member displacing in response to a differential between the first and third pressures.

42. (Original) The method according to Claim 41, wherein in the displacing step the first and third pressures are each isolated from the second pressure, without the use of any dynamic seal.

43. (Previously Presented) The method according to Claim 41, wherein in the displacing step the first pressure is pressure in a first line connected to the actuator, and the third pressure is pressure in a second line connected to the actuator.

44. (Previously Presented) The method according to Claim 41, wherein in the displacing step the first pressure is pressure in a first line connected to the actuator, and the third pressure is pressure in an annulus surrounding the well tool.

45. (Previously Presented) The method according to Claim 41, wherein in the displacing step the first pressure is pressure in a first line connected to the actuator, and the third pressure is pressure in a chamber of compressed gas.

46-51. (Canceled)

52. (Previously Presented) A well tool, comprising:

a flow passage for flow of fluid therethrough;

an actuator;

at least one first magnetic device positioned in a first portion of the well tool at a first pressure, and the actuator displacing the first magnetic device;

at least one second magnetic device positioned in a second portion of the well tool at a second pressure, and the well tool being operated in response to displacement of the operating member; and

a pressure barrier isolating the first and second pressures, and displacement of the first magnetic device on a first side of the barrier causing displacement of the second magnetic device on a second side of the barrier.

53. (Previously Presented) The well tool according to Claim 52, wherein the first pressure is pressure in a line connected to the actuator.

54. (Original) The well tool according to Claim 52, wherein the second pressure is pressure in an internal flow passage formed axially through the well tool.

55. (Original) The well tool according to Claim 52, wherein the first pressure is pressure in an annulus surrounding the well tool.

56. (Original) The well tool according to Claim 52, wherein the first pressure is pressure in a chamber containing compressed gas.

57. (Previously Presented) The well tool according to Claim 52, wherein the well tool is a safety valve.

58. (Previously Presented) The well tool according to Claim 52, wherein the well tool is a sliding sleeve valve.

59. (Previously Presented) The well tool according to Claim 52, wherein the well tool is a packer.

60. (Original) The well tool according to Claim 52, wherein the actuator is a rotational actuator, and wherein rotation of the first magnetic device by the actuator causes corresponding rotation of the second magnetic device and operating member.

61. (Original) The well tool according to Claim 52, wherein the operating member is pressure-balanced.

62. (Original) The well tool according to Claim 52, wherein the first pressure is isolated from the second pressure without use of any dynamic seal.

63. (Original) The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to a pressure differential in the actuator.

64. (Original) The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to operation of a motor in the actuator.

65. (Original) The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to a differential between the first pressure and a third pressure applied to the actuator.

66. (Previously Presented) The well tool according to Claim 65, wherein the third pressure is pressure in a line connected to the actuator.

67. (Original) The well tool according to Claim 66, wherein the first pressure is pressure in an annulus surrounding the well tool.

68. (Original) The well tool according to Claim 67, wherein the second pressure is pressure in a tubular string in which the well tool is interconnected.

69. (Previously Presented) The well tool according to Claim 68, wherein the tubular string pressure is isolated from the line pressure and from the annulus pressure, without use of any dynamic seal.

70. (Previously Presented) The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to pressure in a line connected to the actuator, the line pressure being isolated from the second pressure.

71. (Previously Presented) The well tool according to Claim 70, wherein the line pressure is isolated from the second pressure without use of any dynamic seal.

72. (Previously Presented) The well tool according to Claim 52, wherein the actuator displaces the first magnetic device in response to a differential between pressure in an annulus surrounding the well tool and pressure in a line connected to the actuator.

73. (Previously Presented) The well tool according to Claim 72, wherein the line pressure and the annulus pressure are isolated from the second pressure without use of any dynamic seal.

74. (Original) The well tool according to Claim 73, wherein the second pressure is pressure in a tubing string in which the well tool is interconnected.

75. (Original) The well tool according to Claim 73, wherein the first pressure is the annulus pressure.

76-107. (Canceled)

108. (Previously Presented) A well tool, comprising:

a flow passage for flow of fluid therethrough;

an actuator for displacing an actuator member of the well tool;

an operating member which is displaced to operate the well tool; and

a magnetic coupling between the actuator member and the operating member, the magnetic coupling including first and second magnetic devices, the first magnetic device being connected to the actuator member, and the second magnetic device being connected to the operating member, the first and second magnetic devices being on opposite sides of a pressure barrier.

109. (Previously Presented) A well tool, comprising:

a flow passage for flow of fluid therethrough;

an actuator for displacing an actuator member of the well tool;

an operating member which is displaced to operate the well tool; and

a magnetic coupling between the actuator member and the operating member, the magnetic coupling including first and second magnetic devices, the first magnetic device being connected to the actuator member, and the second magnetic device being connected to the operating member, the first and second magnetic devices being pressure isolated from each other without the use of a dynamic seal.

110. (Previously Presented) A well tool, comprising:

a flow passage for flow of fluid therethrough;

an actuator for displacing an actuator member of the well tool;

an operating member which is displaced to operate the well tool; and

a magnetic coupling between the actuator member and the operating member, the magnetic coupling including first and second magnetic devices, the first magnetic device being connected to the actuator member, and the second magnetic device being connected to the operating member, the first magnetic device including a first series of magnets having polarities opposite to a second series of magnets in the second magnetic device.

111. (Previously Presented) A well tool, comprising:

a flow passage for flow of fluid therethrough;

an actuator for displacing an actuator member of the well tool;

an operating member which is displaced to operate the well tool; and

a magnetic coupling between the actuator member and the operating member, the magnetic coupling including first and second magnetic devices, the first magnetic device being connected to the actuator member, and the second magnetic device being connected to the operating member, each of the first and second magnetic devices including magnets having axially aligned polarities.

112. (Previously Presented) A well tool, comprising:

a flow passage for flow of fluid therethrough;

an actuator for displacing an actuator member of the well tool;

an operating member which is displaced to operate the well tool; and

a magnetic coupling between the actuator member and the operating member, the magnetic coupling including first and second magnetic devices, the first magnetic device being connected to the actuator member, and the second magnetic device being connected to the operating member, each of the first and second magnetic devices including magnets having radially aligned polarities.



113. (Previously Presented) A well tool, comprising:

a flow passage for flow of fluid therethrough;

an actuator for displacing an actuator member of the well tool;

an operating member which is displaced to operate the well tool; and

a magnetic coupling between the actuator member and the operating member, the magnetic coupling including first and second magnetic devices, the first magnetic device being connected to the actuator member, and the second magnetic device being connected to the operating member, each of the first and second magnetic devices including magnets having opposing polarity directions, so that the magnets in each of the first and second magnetic devices are attracted to oppositely directed polarity magnets in the other of the first and second magnetic devices.

114. (Previously Presented) A well tool, comprising:

a flow passage for flow of fluid therethrough;

an actuator for displacing an actuator member of the well tool;

an operating member which is displaced to operate the well tool; and

a magnetic coupling between the actuator member and the operating member, the magnetic coupling including first and second magnetic devices, the first magnetic device being connected to the actuator member, and the second magnetic device being connected to the operating member, each of the first and second magnetic devices including magnets having opposing polarity directions, so that the magnets in each of the first and second magnetic devices are repelled by similarly directed polarity magnets in the other of the first and second magnetic devices.

115. (Previously Presented) A well tool, comprising:

a flow passage for flow of fluid therethrough;

an actuator for displacing an actuator member of the well tool;

an operating member which is displaced to operate the well tool; and

a magnetic coupling between the actuator member and the operating member, the magnetic coupling including first and second magnetic devices, the first magnetic device being connected to the actuator member, and the second magnetic device being connected to the operating member, each of the first and second magnetic devices having a magnetic pattern, the magnetic patterns preventing relative displacement between the first and second magnetic devices.

116. (Original) The well tool according to Claim 115, wherein the magnetic patterns are produced by varied spacings between magnets in the first and second magnetic devices.

117. (Original) The well tool according to Claim 115, wherein the magnetic patterns are produced by varied polarity sequences between magnets in the first and second magnetic devices.

118. (Original) The well tool according to Claim 117, wherein the varied polarity sequences include alternating magnet polarities in the first and second magnetic devices.

119-120. (Canceled)

121. (Previously Presented) The well tool according to claim 52, wherein the operating member is a closure member of a valve.

122-123. (Canceled)

124. (Previously Presented) The well tool according to Claim 57, wherein the operating member is an opening prong of the safety valve.

125-130. (Canceled)

131. (Previously Presented) The well tool according to Claim 58, wherein the operating member is a sliding sleeve of the valve.

132. (Previously Presented) The well tool according to Claim 59, wherein the operating member is a setting mandrel of the packer.

133-152. (Canceled)

153. (Previously Presented) A method of completing a well, the method comprising the steps of:

positioning a well tool in the well;

displacing an actuator member of the well tool; and

translating displacement of the actuator member to displacement of an operating member of the well tool, the translation being performed across a pressure isolation barrier without use of any dynamic seal, and the translating step being performed using a magnetic coupling between the actuator member and the operating member.

154-163. (Canceled)

164. (Previously Presented) A method of completing a well, the method comprising the steps of:

positioning a well tool in the well;

displacing an actuator member of the well tool; and

translating displacement of the actuator member to displacement of an operating member of the well tool, the translation being performed across a pressure isolation barrier without use of any dynamic seal, and the translating step further comprising displacing a first magnetic device operatively associated with the actuator member to thereby cause displacement of a second magnetic device operatively associated with the operating member.

165. (Canceled)

166. (Previously Presented) A method of installing a tubular string in a well, the method comprising the steps of:

interconnecting in the tubular string a well tool including an actuator member;

positioning the tubular string in the well; and

translating displacement of the actuator member to displacement of an operating member of the well tool, the translation being performed across a pressure isolation barrier without use of any dynamic seal, and the translating step being performed using a magnetic coupling between the actuator member and the operating member.

167-176. (Canceled)

177. (Previously Presented) A method of installing a tubular string in a well, the method comprising the steps of:

interconnecting in the tubular string a well tool including an actuator member;

positioning the tubular string in the well; and

translating displacement of the actuator member to displacement of an operating member of the well tool, the translation being performed across a pressure isolation barrier without use of any dynamic seal, and the translating step further comprising displacing a first magnetic device operatively associated with the actuator member to thereby cause displacement of a second magnetic device operatively associated with the operating member.

178. (Canceled)

179. (Previously Presented) A completion string for use in a well, the completion string comprising:

a well tool interconnected in the completion string, the well tool including an actuator member and an operating member, displacement of the actuator member being translatable into displacement of the operating member across a pressure barrier without use of any dynamic seal, and the well tool further including a magnetic coupling between the actuator member and the operating member.

180-189. (Canceled)

190. (Previously Presented) A completion string for use in a well, the completion string comprising:

a well tool interconnected in the completion string, the well tool including an actuator member and an operating member, displacement of the actuator member being translatable into displacement of the operating member across a pressure barrier without use of any dynamic seal, and

wherein a first magnetic device operatively associated with the actuator member causes displacement of a second magnetic device operatively associated with the

operating member when displacement of the actuator member is translated into displacement of the operating member.

191. (Canceled)

192. (Previously Presented) A method of completing a well, the method comprising the steps of:

positioning a well tool in the well;

displacing an actuator member of the well tool; and

translating displacement of the actuator member into displacement of an operating member of the well tool using a magnetic coupling between the actuator member and the operating member, and performing the translating step across a pressure isolation barrier without use of any dynamic seal.

193. (Previously Presented) The method according to claim 192, wherein in the translating step, a pressure differential exists across the pressure isolation barrier.

194. (Previously Presented) A method of completing a well, the method comprising the steps of:

positioning a well tool in the well;

displacing an actuator member of the well tool; and

translating displacement of the actuator member into displacement of an operating member of the well tool using a magnetic coupling between the actuator member and the operating member, and

wherein in the translating step, the actuator member is exposed to a first pressure, and the operating member is exposed to a second pressure different from the first pressure, without use of any dynamic seal therebetween.

195-204. (Canceled)

205. (Previously Presented) A method of installing a tubular string in a well, the method comprising the steps of:

interconnecting in the tubular string a well tool including an actuator member;  
positioning the tubular string in the well; and

translating displacement of the actuator member into displacement of an operating member of the well tool using a magnetic coupling between the actuator member and the operating member, and performing the translating step across a pressure isolation barrier without use of any dynamic seal.

206. (Previously Presented) The method according to claim 205, wherein in the translating step, a pressure differential exists across the pressure isolation barrier.

207. (Previously Presented) A method of installing a tubular string in a well, the method comprising the steps of:

interconnecting in the tubular string a well tool including an actuator member;  
positioning the tubular string in the well; and

translating displacement of the actuator member into displacement of an operating member of the well tool using a magnetic coupling between the actuator member and the operating member, and

wherein in the translating step, the actuator member is exposed to a first pressure, and the operating member is exposed to a second pressure different from the first pressure, without use of any dynamic seal therebetween.

208-217. (Canceled)

218. (Previously Presented) A completion string for use in a well, the completion string comprising:

a well tool interconnected in the completion string, the well tool including an actuator member, an operating member, and a magnetic coupling, displacement of the actuator member being translatable into displacement of the operating member using the magnetic coupling, and the well tool further including a pressure isolation barrier between the actuator member and the operating member, displacement of the actuator member being translatable into displacement of the operating member across the pressure isolation barrier without use of any dynamic seal.

219. (Previously Presented) The completion string according to claim 218, wherein a pressure differential exists across the pressure isolation barrier when displacement of the actuator member is translated into displacement of the operating member.

220. (Previously Presented) A completion string for use in a well, the completion string comprising:

a well tool interconnected in the completion string, the well tool including an actuator member, an operating member, and a magnetic coupling, displacement of the actuator member being translatable into displacement of the operating member using the magnetic coupling, and



wherein the actuator member is exposed to a first pressure, and the operating member is exposed to a second pressure different from the first pressure, when displacement of the actuator member is translated into displacement of the operating member.

221-274. (Canceled)